

class steamers; 28th, river rising and full of floating ice. Cincinnati, 2nd, drift-wood and floating ice in river; 14th, canal frozen over, shore ice forming along river; 18th, small quantities of soft ice in river; 19th, some ice in river but not enough to obstruct boats; 20th, considerable ice in river, boats found difficulty in forcing their way through it; 21st, heavy floating ice in river; 22nd, 23rd, small quantities of floating ice. *Tennessee River*—Chattanooga, 2nd, thick ice in river. *Miami River*—Cincinnati, 14th, floating ice in river. *Licking River*—Cincinnati, 14th, floating ice in river. *Alleghany River*—Pittsburg, 15th, 26th, 27th, 28th, large quantities of floating ice in river. *Monongahela River*—Morgantown, West Va., 16th, large quantities of floating ice in river. Pittsburg, 26th, 27th, 28th, floating ice in river. *Susquehanna River*—Catawissa, Pa., north branch closed during the month, ice eight to ten inch thick. *Delaware River*—Trenton, N. J., ice in river broken up, having been closed for 46 days; 15th, river frozen again. *Hudson River*—Garrisons, N. Y., 28th, river still closed with ice. *New Jersey Coast*—Long Branch, 11th, the vast field of ice which has filled the "Horseshoe" for over a month has been moving away gradually for the past two days. Last night the remaining portion, containing many thousand acres, moved slowly out with the tide. *Flushing Bay*—Flushing, N. Y., 13th, bay open, tug boat passed through with cargo of coal; 15th, bay closed; 26th, reopened by a channel being sawed through the ice, tug boat arrived with coal; 28th, another boat arrived with coal. *Deerfield River*—Rowe, Mass., 12th, ice passed out. *Ottawa River*—Woodstock, Vt., 12th, breaking up; 13th, river clear. *Lake Superior*—Duluth, 1st to 5th, harbor frozen over, and also lake as far as the eye can reach, average thickness fourteen inches; Marquette, 5th, ice in harbor. *Lake Michigan*—Grand Haven, 26th, lake frozen as far as the eye can reach, though the Milwaukee boats still keep a channel through it. *Grand Traverse Bay*—Northport, Mich., bay all open outside of harbor. *Grand River*—Grand Haven, Mich., river still full of floating ice. *Lake Geneva*—Bloomfield, Wis., 4th, ice twenty-five inches thick. *St. Clair River*—Port Huron, Mich., 13th, ice so thick that the Grand Trunk R. R. Co. are compelled to blast it by exploding sunken torpedoes, in order to make a passage for their ferry boats. *Detroit River*—Detroit, 2nd, ice along the shore. *Lake Erie*—Cleveland, 1st, large floes of floating ice moved toward the shore by the prevailing N.W. winds; 2nd, floating ice as far as the eye can reach; 4th, lake covered with floating ice; 8th, lake frozen out to a great distance, very thick near shore; 11th, ice firm on lake; 12th, ice breaking up; 15th, lake frozen; 17th, ice still firm; 18th, lake covered with ice; 22nd, ice breaking up. *Sandusky Bay*—Sandusky, 28th, ice in middle of bay twenty inches thick, loaded wagons and sleds crossed over to the Peninsula and Johnson's Island. *Lake Champlain*—West Charlotte, Vt., 1st, lake frozen over; 2nd, crossing on the ice; 4th, ice boats crossed; 10th, lake open near Four Brothers' Islands; 12th, open from Hillsboro Point, N. Y., to Hill Point, Vt., and north to the Islands; 15th, lake closed, people crossing; 16th, teams crossed for first time; 25th, cutting ice twelve inches thick. *Mt. Desert Sound*—Mt. Desert, Me., 1st, frozen over.

High Tides.—Cape Lookout, N. C., 8th, 19th.

TEMPERATURE OF WATER.

The *temperatures of water*, as observed in rivers and harbors, with average depth when observations were taken, are given in table on chart No. II. At Alpena, Buffalo, Burlington, Cleveland, Escanaba, Grand Haven, Sandusky and Toledo no observations were made on account of ice. At the following stations observations were only made on the dates indicated: Chicago, 1st, 13th, 17th to 25th, 28th; Detroit, 1st; Duluth, 1st to 5th; Marquette, 1st to 4th; Milwaukee, 8th to 17th; New York City, 6th to 13th, 20th, 21st and 26th.

ATMOSPHERIC ELECTRICITY.

Thunder-storms.—7th, Fla. 8th, Fla. 9th, Miss. 10th, Mo., Miss., La., Tex. 11th, Fla., W. Va., Ga., N. C. 14th, Idaho. 16th, Tex. 17th, Fla., Ala., La., Ga. 18th, Ala., Ga., La., N. C., Fla., S. C. 22nd, Ala., Ind., La., Miss., Tex., Mo., Ill., Tenn., Ky. 23rd, Fla., Miss., Tex., Ala. 25th, Ill., Ind., Tenn., Miss., La. 26th, Miss., Tex., Va. and Conn.

Auroras.—Monticello, Iowa, 22nd; Topeka, Kan., 2nd; Mechanic's Falls, Me., 13th; Cambridge, Mass., regularly looked for each evening at 8 p. m., except the 10th, but none seen; observations hindered by clouds on the 3rd, 5th, 6th, 11th, 16th to 20th, 22nd, 23rd, 25th, 26th; partially cloudy in the north, 1st, 13th, 27th; moonlight, 1st, 2nd, 4th, 7th, 8th, 27th, 28th; evenings on which the aurora might have been seen, if present, 9th, 12th, 14th, 15th, 21st, 24th; Atco, N. J., 28th; Cape Vincent, N. Y., regularly looked for each evening at 8 p. m., but none observed; Pembina, Dak., 11th, 14th; Coalville, Utah, 13th.

OPTICAL PHENOMENA.

Solar Halos.—1st, Iowa, Me., Ind. Ty. 2d, Iowa, Fla., Conn. 3d, Iowa, Me., Neb., Pa., Utah, Dak. 4th, Ind., Mich., Pa., Dak., Ohio, Ga. 5th, Ill., Iowa, Me., Mass., N. H., N. Y., Dak. 6th, Conn., Me. 7th, Conn., Me., Tex., Dak., Tenn. 8th, Kan., Utah, Dak., Tex., Min., N. M. 9th, Ind., Iowa, Mich., Miss., Ohio, N. C., Ga. 10th, Ill., Ind., Mich., Miss., N. J., N. Y., Ohio, Pa., Tex., Iowa, Dak., Ga. N. C., Va. 11th, Iowa, Me., Dak. 12th, Kan., Iowa, Neb., Dak., Minn., Ga. 13th, Ill., Iowa, Mich., Minn., Ga. 14th, Ill., Ind., Iowa, Miss., Neb., Tex., Dak. 15th, Ind., Iowa, Ill. 16th, Conn., Ia., N. J., N. Y., Pa., Ohio, Va. 17th, Me., Mich., N. Y., Vt., Dak. 18th, Mich., N. Y. 19th, Ill., Iowa, N. Y., Dak., Minn., Ga. 20th, Utah, Ohio, Ga. 21st, Neb., N. H., Nev., Iowa. 22d, Conn., Me., Miss., N. H., N. Y., Utah, Tex., Iowa, Ohio. 23d, Ill., Kan., Mass., Neb., N. H., Tenn., Dak., Iowa, N. C., Me. 24th, Ind., Mich. N. H., Ohio, Dak., Ga. 25th, Iowa, Neb., N. H., Dak., Ohio, Ga. 26th, Ill., Iowa, Neb., Tenn., Tex. 27th, Iowa, Ohio, Va., Neb., Tex., Tenn., Ga., Conn. 28th, Ill., Ind., Iowa, Mich., Ohio, Va., Dak., Tex., Tenn.